Claims

- [c1] In a system where an automatic meter reader device communicates with a host at a remote location using a communication line that is shared with at least one other user, the improvement comprising
 - (A) means for collecting information about the times when said communication line is used by said at least one other user;
 - (B) means for analyzing said information to determine time periods when said communication line is less likely to be used by said at least one other user; and
 - (C) means for directing said automatic meter reader device to communicate with said remote location during said time periods.
- [c2] The improvement of Claim 1 wherein said automatic meter reader device monitors electricity usage.
- [c3] The improvement of Claim 1 wherein said communication line is a telephone line, cable television modem, satellite communication, or radio frequency communication.

- [c4] The improvement of Claim 1 wherein said means for collecting information is located at the site of said automatic meter reader device.
- [c5] The improvement of Claim 1 wherein said means for collecting information collects information about every use of said communication line.
- [c6] The improvement of Claim 1 wherein said means for collecting information collects only information about the occurrence of conflicts in the use of said communication line.
- [c7] The improvement of Claim 1 wherein said means for analyzing said information is a program that counts calls in time slots throughout the day and identifies the slots with the least number of calls.
- [08] The improvement of Claim 1 wherein said means for analyzing said information is an algorithmic pattern recognition processor.
- [09] The improvement of Claim 10 wherein said means for analyzing said information is a learning program.
- [c10] The improvement of Claim 1 wherein said means for an-alyzing said information is an automatic neural network algorithm.

- [c11] The improvement of Claim 1 wherein said means for analyzing said information is located at said remote location.
- [c12] The improvement of Claim 1 wherein said information is analyzed subject to constraints on communications between said automatic meter reader device and said host.
- [c13] The improvement of Claim 1 wherein said means for directing said automatic meter reader is part of said automatic meter reader.
- [c14] The improvement of Claim 1 wherein said means for directing said automatic meter reader device also controls when said host communicates with said automatic meter reader device.
- [c15] The improvement of Claim 1 wherein said means for directing said automatic meter reader device terminates use of said communication line by said automatic meter reader device when another user comes on said line.
- [c16] In a system where an automatic meter reader device reads electrical power usage and communicates about said usage to a host at a remote location using a telephone line that is shared with at least one other user, the improvement comprising

- (A) means for collecting information about the time and date when said communication line is used by said at least one other user;
- (B) an algorithmic pattern recognition processor for analyzing said information to determine time periods when said communication line is less likely to be used by said at least one other user; and
- (C) means for directing said automatic meter reader device and said host to communicate with each other only during said time periods.
- [c17] The improvement of Claim 16 wherein said algorithmic pattern recognition processor is an automatic neural network algorithm.
- [c18] A method of communicating between an automatic meter reader and a remote location over a communication line that is shared with at least one other user comprising
 - (A) collecting information about the times of day when said communication line is used by said at least one other user;
 - (B) analyzing said information to determine time periods when said communication line is less likely to be used by said at least one other user; and (C) directing said AMR device to communicate with
 - said remote location during said time periods.

- [c19] The method of Claim 18 wherein said information is collected only when a conflict arises between the use of said communication line by said automatic meter reader and its use by another user.
- [c20] The method of Claim 18 wherein said information is analyzed using an automatic neural network algorithm.